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Research Report No. 5

November, 1963

- Part I. "Bluff Pottery Analysis - Thin Section Experiment
No. 3: Paste and Temper Variations in One Bluff
Pottery Variety"
- Part II. "Additional Paste Data for C-71, C-72, and C-119
Through C-124 (previously reported in Research
Report No. 1)"

James Warren Porter

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Part I. "Bluff Pottery Analysis - Thin Section Experiment No. 3: Paste and Temper Variations in One Bluff Pottery Variety"

Part II. "Additional Paste Data for C-71, C-72, & C-119 through C-124 (previously reported in Research Report No. 1)"

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Introduction

This report is divided into two parts. The first deals with the descriptive details of a series of sherds selected from one pottery variety. These sherds were excavated during 1960, approximately 240 meters west of Monks Mound, under the Highway Archaeological Salvage Program. The second part contains additional details for a set of slides previously reported in Research Report No. 1. In view of the number of thin sections that have now been studied, all of the first set have been rechecked in order to evaluate the paste types in terms of those established with Research Report No. 3. This report will concentrate on cross referencing these previously described slides with the rest of the experiments.

Experiment No. 3 was undertaken to explore the paste and temper variations found in one Bluff pottery variety. On the basis of physical similarity, a number of Bluff pottery varieties were defined by Vogel and Wittry in a paper distributed at the Central States Anthropological Society meetings held in St. Louis (May, 1962). In their paper (page 6) was the basic description for the Bluff Jar - Variety 1. For this variety they had 169 rim sherds listed. Mr. Vogel rapidly gained experience in identifying the presence of grog in Bluff sherds. Because of Mr. Vogel's careful and accurate identifications, and his field experience with Dr. Wittry, I once again enlisted his aid in selecting sherds for this study. We discussed the Bluff pottery varieties and settled for a sample of the Bluff Jar - Variety 1, covering the range of temper types that he had identified megascopically.

Besides the close stylistic similarity of the sherds, Mr. Vogel included samples from a time range of Early Bluff to Late Bluff as defined through the stratigraphic excavations directed by Dr. Wittry. They have tentatively visualized a situation during the time 500-800 AD where a Late Woodland people occupied the area during the summer months. Their stratigraphic excavations allowed for much better coverage of the area than is normally found in archaeological excavations due to the fact that it was accomplished under the Highway Archaeological Salvage Program. Many complete houses were found and excavated along with hundreds of refuse pits. The sample of sherds for this study was taken from house units and each sherd represents a vessel.

I will not quibble at present with the brackets of "early", "middle", and "late", but rather with the amount of time that is supposed to have elapsed

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Paste: Clay with abundance of coarse silt and very fine sand. This is the type of paste referred to in past reports as type B.

Grog: Some is the low silt type referred to as type A and the remainder is a silty type with many angular sand grains. The silty type may represent a sand tempered variety. The grit seen in the sherd comes from the paste A grog. A few pieces of grog are vitrified. One type A grog also contains what appears to be grog.

Cross Reference: C-512, C-514, & C-516 (Research Report No. 3), and C-443 through C-452, C-23, C-25, C-125, C-126, C-128, C-129, C-189, & C-190 (R.R. #4), and C-470 & C-480 in this report.

2. C-471: House 42 - Middle Bluff
- Temper: Grog, with most as clinker.
- Paste: A dark silty paste with a few fine sand grains. This has been labeled type F. The fine sand grains are quartz (some undulatory extinction) and chert.
- Grog: Most occur as clinker, making paste correlation impossible. At present I have continued to classify this bloated material as grog since there is some evidence that the clinker found in the sherds comes from such a source. A detailed study of clinker in archaeological sites is partially completed and some changes may be necessary soon.
- Cross Reference: C-71, C-72, C-122, & C-124 (R.R. #1), C-495 & C-521, (R.R. #3), C-127 (R.R. #4), and C-474, C-479, & C-482 in this report.

3. C-472: House 51 - Middle Bluff
- Temper: Grog, with grit particles prominent. The grit is primarily altered plagioclase and orthoclase, with some quartz and hornblende. Rock fragments indicate addition of some metamorphic types as well as heavily altered diabasic gabbro. This type of situation is common in sherds where we find grog tempering.
- Paste: The paste is a medium silt - no sand type, identical to paste G in Research Report #3. As with G it is brownish-orange color in plain light.
- Grog: Only a few pieces are noted but the grog is identical in all respects to the paste of the sherd. Some small grit particles are still to be seen in the grog and are mineralogically like those seen throughout the paste of this sherd.
- Cross Reference: C-498, C-503 (R.R. #3)

4. C-473: House 60 - Middle Bluff
- Temper: Grog, with grit particles. Few rock fragments of plagioclase (altered) (oligoclase), quartz and heavily altered hornblende. Most are metamorphic types. Also present are a few basic igneous rocks with lath-like plagioclase with pyroxene (shiller structure) and magnetite. One shale fragment is present.
- Paste: A common paste called type A in previous reports. It is a very low silt type with brownish drab color in plain light. The occasional patches of coarse silt-very fine sand seen scattered throughout this paste are interpreted as part of the grog. This situation may be the type of evidence that will finally link type A and type B pastes. There are dark linear patches

of clay that have lost crystallinity. These are concentrated in the center around grog and grit particles or along the longitudinal cavities. In reflected light these patches are white.

Grog: The grog is scattered and most appears to be the same type of paste as the sherd (type A). A few are much more silty and contain a few grains of sand. One low silt type also contains grog.

Cross Reference: C-499, C-505, C-513, & C-518 (R.R. #3), much of the grog in sherds listed in Research Report #4, C-465, and C-464 in this report as well as C-121 in part II.

5. C-474: House 64 - Middle Bluff

Temper: Grog, with a few fragments of grit derived from the grog.

Paste: Very silty type listed as type F in previous reports. A few fine sand grains present - quartz.

Grog: Half of the grog is type A (low silt type) and the rest is bloated clinker. As in C-471 some crystals are developed in the glass. One grog fragment is possibly of type B paste but not enough present to determine. The low silt type is very much like the paste of C-465 in this report.

Cross Reference: see C-471.

6. C-475: House 64 - Middle Bluff

Temper: Shel, which is coarse and appears identical to large river clams used and tested in the laboratory.

Paste: A very low silt type with no sand grain present. The abundance of shel and the lack of any other distinctive features leaves little to be used for separations. By comparison to Research Report #3 it appears as if this sherd would have a paste type identical with type D.

Slip: The slip was red in reflected light with much silt. Appeared to be different from paste.

Cross Reference: C-510, C-511, and C-520 (R.R. #3).

7. C-477: House 70 - Middle Bluff

Temper: Grog, with one grit particle present.

Paste: Very silty type with a few fine sand grains present. This type contains a high amount of coarse silt and is not the F type but most like that lettered I in Research Report #3.

Grog: Most grog is the same as the sherd. Some of the low silt type (A) is present and the one grit particle came from the pottery used to temper this sherd. One of the silty grog fragments contains 2 sand grains (quartz - one undulatory extinction), suggesting the possibility of some sand tempered grog being used.

Cross Reference: C-500 (R.R. #3).

8. C-478: House 70 - Middle Bluff

Temper: Grit, with mineral fragments consisting of quartz (undulatory extinction), microcline, plagioclase, biotite. One rock fragment is quartz, heavily altered orthoclase, and muscovite.

Paste: Small amount of silt and no sand size grains present. This paste is identical to type C as described in Research Report #3 under C-484.

Cross Reference: C-484 through C-488, C-490 through C-494, C-497, C-501, C-502, C-504, C-506, C-517, and C-519 (R.R. #3).

9. C-479: House 72 - Middle Bluff
 Temper: Grog, with scattered grit fragments. A variety of grit is present as expected with grog tempering.
 Paste: A silty paste (F) with some sand grains present. Sand is quartz (some undulatory extinction), plagioclase feldspar, and one rounded chert.
 Grog: Some grog is vitrified but not bloated. Some is the same as the sherd and the remainder is a moderately silty type (G?)
 Cross Reference: see C-471

10. C-467: House 17 - Late Bluff
 Temper: Grit, with exclusive use of crushed limestone indicated. The limestone is very fossiliferous.
 Paste: This paste is low in silt and contains many sand sized grains (rounded to well-rounded). After checking against Research Report #3 it was noted that this paste was much like C-508 and that C-507 and C-508 could be separated. Thus C-507 remains type H and a new letter is assigned to C-508 and others such as this sherd. The letter L will be used. The sand grains are quartz (much undulatory extinction), one quartz grain (well-rounded) with secondary quartz all around it, quartzite fragment, rock fragments of quartz and plagioclase feldspar, orthoclase (heavily altered to sericite), chert, and hornblende (altering). Although not reported as yet, this paste has been seen in other limestone tempered sherds from the Pulcher Site.
 Cross Reference: C-508 (R.R. #3), and C-466, C-469, & C-481 in this report.

11. C-468: House 18 - Late Bluff
 Temper: Grit, with exclusive use of limestone. The limestone is very fossiliferous, containing shells and chert. The scattered shell throughout the paste (possibly giving the sherd a shell tempered look) appears to be coming from the limestone.
 Paste: Moderately silty with sand grains. The sand grains are well-rounded to angular. Quartz is common, along with orthoclase, quartzite rock fragment, secondary quartz around well-rounded grain of quartz, and a rock fragment of quartz and feldspar intergrowth.
 Cross Reference: C-509 (R.R. #3)

12. C-465: House 73 - Late Bluff
 Temper: Grit, with a variety of rock fragments present. The majority indicate a granitic type metamorphic background. One diabasic texture gabbro present. In these sherds with no contamination (mixture) through the use of grog it appears as if many metamorphic types easily obtainable from glacial sources are utilized for temper. In areas where clays (as used in this sherd) are easily obtained one finds a similar variety of rocks present in the local streams. These rocks were derived from nearby glacial sources, and deposited in the streams.
 Paste: The low silt type described as type A.
 Cross Reference: see C-473.

13. C-480: House 73 - Late Bluff
 Temper: Grog, with some grit present. The grit is from granitic rocks. One fragment of ferruginous sandstone is noted.

Paste: This paste is the type listed as B and contains abundant coarse silt-very fine sand particles.
 Grog: Primarily like the sherd (type B) and one of the low silt type (A).
 Cross Reference: see C-476.

14. C-481: House 73 - Late Bluff
 Temper: Grit, with exclusive use of limestone. The limestone contains some fossils.
 Paste: See C-467, sand grains mainly quartz (undulatory extinction common).
 Slip: The slip is red in reflected light, is very silty with a few very fine sand grains present, and resembles the paste.
 Cross Reference: see C-467.
15. C-482: House 73 - Late Bluff
 Temper: Grog, with clinker prominent
 Paste: See C-471.
 Cross Reference: see C-471.
16. C-464: House 19 - Early to Late Bluff (?)
 Temper: Grit, with one fragment of possible grog present. Rock fragments indicate a variety of metamorphic types being utilized for grit.
 Paste: Low silt type (A) with one large siltstone fragment.
 Grog: The fragment that appears to be grog is like the sherd and may represent a lump of the material that was not completely mixed with the rest of the paste.
 Cross Reference: see C-473.
17. C-466: House 19 - Early to Late Bluff (?)
 Temper: Grit, with exclusive use of limestone. Most of the limestone has been leached away, but enough is present to indicate that a fossiliferous limestone was used.
 Paste: see C-467. Sand grains are well-rounded to angular. Quartz (some undulatory extinction), quartzite fragments, chert, well-rounded plagioclase (altered/sericite), and well-rounded hornblende.
 Cross Reference: see C-467.
18. C-469: House 19 - Early to Late Bluff (?)
 Temper: Grit, with exclusive use of limestone.
 Paste: See C-467. Sand grains are quartz (undulatory extinction) and quartzite. This was not the best of slides and the sample not enough to be positive of features for comparison to other similar pastes.
 Cross Reference: see C-467.
19. C-470: House 19 - Early to Late Bluff (?)
 Temper: Grit, with numerous rock fragments present. Since this slide represents what I believe to be a typical grit tempered for this paste type, I shall describe in more detail the types of rock fragments present.
 a. Quartzite -
 b. Plagioclase laths with hornblende
 c. One large fragment made up of two grain sizes. One area is coarse with large plagioclase (heavily altered), and next

to it an area of fine grained quartz (equidimensional) (undulatory extinction) mosaic and a brownish fine grained micaceous material scattered throughout.

- d. Large fragment of rock containing altered pyroxene (shiller structure), zoned feldspars (some twining), and a small amount of quartz.
- e. Large fragment of plagioclase laths and melilite with peg structure.
- f. Another similar to d.
- g. " " " "
- h. Mosaic quartz with one plagioclase grain. From this type of data it becomes clear that no one single rock type has been used in the area of manufacture. This slide and others like it indicate that the potters secured their grit materials from local streams or glacial deposits containing a variety of rock types.

Paste: The coarse silt-very fine sand type (B). See C-476. Minerals in the very fine sand range include quartz (much undulatory extinction), heavy minerals such as augite and zircon, chert, biotite, and a few plagioclase feldspars.

Cross Reference: see C-476.

Part II. Additional Descriptions of Paste for C-71 & C-72, and C-119 through C-124 (previously listed in Research Report No. 1)

- 20. C-120: House 44 - Late Bluff
 Temper: Grit - acid igneous rocks
 Paste: This paste is identical to that listed in Research Report #3 as K. It resembled type C except for more silt and a few fine sand grains. These were subrounded to rounded and consisted of quartz and chert.
 Cross Reference: C-515 (R.R. #3), and possibly C-119 & C-123 in this report.
- 21. C-121: House 44 - Late Bluff
 Temper: Grog, with grit particles present (acid-igneous rocks)
 Paste: Typical low silt paste listed as type A. All features consistent with Research Report No. 3.
 Grog: Most is identical to the sherd (A) and a few appear to be the same as C-120 (paste type K).
 Cross Reference: see C-473 in this report.
- 22. C-123: House 44 - Late Bluff
 Temper: Grit, with acid-igneous rocks being used.
 Paste: Identical to C-120 but with the addition that numerous chert fragments are found throughout the paste. A few chert fragments reach the size of the larger grit particles. Although I have not set aside another paste type letter there is a possibility that this will eventually be separated from the type K. C-119 also has this paste.
 Cross Reference: see C-120
- 23. C-119: House 75 - Late Bluff
 Temper: Grit, which is from acid-igneous background.
 Paste: Identical to C-123, type K (?)
 Cross Reference: see C-120.

24. C-122: House 75 - Late Bluff
 Temper: Grog, with a few grit particles present.
 Paste: The silty type listed as F in other reports. Few well-rounded sand grains of quartz (some undulatory extinction) and chert.
 Grog: Most of the grog is the same as the sherd (F) with a few of the low silt type (A). Scattered throughout the paste are bar-like cavities which strongly resemble the leached shell tempered varieties. No grog fragments could be found which contained the shell but the possibility that some shell tempered grog was used is good. This could easily account for the shell cavities since a second recrushing of the shell by addition to this third vessel and subsequent leaching would remove almost all evidence of its original context.
 Slip: The slip on this sherd is bright red in reflected light and contains silt grains similar to the paste.
 Cross Reference: see C-471.
25. C-124: House 75 - Late Bluff
 Temper: Grog, with no grit present
 Paste: The same as C-122 - type F.
 Grog: Most grog fragments are the same as the sherd (F). A few of the low silt type are present (A). One clinker fragment noted. The one clinker fragment could have been derived from those types with the silty paste (F) which is only tempered with clinker particles. Unfortunately no grog in grog types were noted.
26. C-71 and C-72:
 These two slides were from the same vessel. No time placement was indicated by Dr. Wittry in the original experiment. The vessel came from feature 142, 1.7-2.7' below plow zone, on tract 15B, west of Monks Mound.
- Temper: Grog, with most in form of clinker.
 Paste: The silty, no sand type called F in our laboratory reports.
 Grog: Only two fragments are not bloated to clinker. They are identical to the paste of the sherd and were not detected in the original survey.
 Cross Reference: C-495 & C-521 (R.R. #3), C-127 (R.R. #4), and C-471, C-474, C-479, and C-482 (this report)

Summary of Paste Types Referred to in Research Reports 3, 4, and 5.

The use of letters to identify similar pastes in Research Report No. 3 has been expanded to cover both reports No. 4 and 5. Since one change has been made since No. 3 and a new one added, it will be useful to list the pastes distinguished thus far. It should be noted that the only change is in Research Report No. 3 where C-508 has been removed from type H and assigned the letter L. On page 13 of report No. 3 only one slide (C-507) should remain in the H type.

Type A: Low amount of silt and no sand grains present. Brownish to brownish drab in color with plain light. Where clays are still crystalline they usually present a similar optic orientation in rather large patches. Often the clays in one slide range from crystalline patches to complete vitrification (dark brown) along

the longitudinal cracks in the pottery or around the tempering material whether it is grog or grit. Hematite specks are scattered throughout the paste and in reflected light appear as bright red spots in the paste.

- Type B: An abundance of coarse silt and very fine sand grains is the most noticeable feature of this paste. These grains are evenly distributed throughout the paste. The amount of finer silt particles is very low. The silt and sand occur as sharp angular fragments of quartz primarily, but some feldspar, chert, and heavy minerals have been noted. This paste is believed to be related to type A but as yet no field geology or test tile experiments with samples collected have revealed its exact location in the adjacent area.
- Type C: Particles of the silt size range are few and consist of slivers of quartz and an occasional plagioclase feldspar. No sand size grains are present. The color is an even reddish-brown in plain light. In the paste are many small rounded (some irregular) pellets of clay having different optic orientations in relation to the paste immediately adjacent as well as to each other. They differ slightly in color being less of the reddish cast and more drab gray-brown. Hematite specks are scattered throughout the paste.
- Type D: This type is dark to black in plain light and is shell tempered. The amount of silt is very low and some grains of coarse silt or very fine sand are present. By comparing only silt and sand frequencies a few others would appear to be the same but the consistent shell tempering and black to dark brown color uniformly over the whole slide set it aside. It appears to be from an alluvial flood-plain deposit so common in the larger river valleys such as the Mississippi.
- Type E: A moderate amount of silt and a few fine or medium sand grains are present. The contorted appearance of this paste appears to be due to varying degrees of crystallinity of the clay. This paste is much like other types and should be considered tentative until further tests with test tiles and known clays has been completed.
- Type F: This paste is high in the amount of silt grains and contains an occasional partially rounded fine or medium sand grain. The color is a dark to light brown usually uniformly over the whole slide. This paste is grog or grog and clinker tempered.
- Type G: Moderate amount of silt (especially coarse silt) and no sand are not too definitive for separation but in comparisons with various slides there is an overall difference. The brownish-orange in plain light. Since it closely resembles both types A, B, and C, this type is tentative and may prove to be related to one or more of the first three types. As stated under type B, there is suspicion that A and B are related geologically. Paste G may be intermediate.
- Type H: This is a very silty type similar to F, but with limestone temper.
- Type I: This silty paste contains abundant coarse silt with no sand sized particles. It will eventually be grouped with others as studies continue. Its general appearance in plain light has been different enough to date to warrant tentative separation.

- Type J: Moderately silty with occasional fine and very fine sand grains present. Although one of the shell tempered types, it has appeared with enough difference to set it aside.
- Type K: Moderately silty and a few very fine sand grains, otherwise very much like type C except for lack of the small patches or pellets of clay (see type C).
- Type L: Identical to type H only with a few grains of medium to coarse sand. Another tentative type found with grit-limestone temper.

In using these paste types I have carefully rechecked each slide against those which have been selected to represent the type. The tentative types may well change with additional work, but there is no question that many of these are basically different and can be used to study the source of the potter's materials. At present there is no question in my mind that type A represents the use of a weathered highly organic shale, while type F is an alluvial deposit from the floodplain of the Mississippi River. Continued research with clays and studies of their behavior in the laboratory under varying conditions will eventually allow us to establish paste types on a more firm basis. At present these will do for our preliminary studies.

Discussion

A glance at the summary chart immediately indicates the heterogeneous nature of paste types to be found in one stylistic variety. Temper also varies more than was originally suspected. According to Mr. Vogel's observations it was expected that variation would be found, but the degree was not what I had expected. This not only applies within a time unit, such as middle bluff, but throughout the whole time sequence as well. What I propose to do first is look over what suggestive groupings can be made and would advise further testing of these possible associations.

The one interesting association is with grit-limestone tempered sherds from the "Late Bluff" area. Three sherds from three different houses (C-467*H17, C-468*H18, and C-481*H73) all have the same temper (fossiliferous limestone) and similar pastes. Two other sherds with the same features are to be found in House 19 (C-466 and C-469) which as indicated earlier, is supposed to span the whole Bluff sequence. It would appear that the limestone tempered pottery with paste type L occurs only in the "Late Bluff" period. It is probably premature to mention it, but another thin section experiment involving sherds from the Pulcher Site (11 miles to the southwest) has produced many cordmarked, limestone tempered sherds with similar pastes. My suggestion at this point is that these limestone tempered sherds were not made in the Monks Mound vicinity, but rather manufactured at Pulcher. Their presence in houses at Monks Mound is due to trade. Although yet to be reported, the sherds from Pulcher also contain pastes from other areas, such as paste type A and B.

When comparing the vessels from a single house, such as House 73 ("Late Bluff"), there is a wide variety for the four vessels. Unfortunately we do not have enough sherds from the earliest period and one of its houses to see if this apparent heterogeneity is consistent through time. There is no consistent paste or temper grouping with houses anywhere in the sequence except paste L-- limestone tempered type already mentioned.

In adding the restudy of pastes from sherds previously reported in Research Report No. 1, I had hoped to increase the sample of 'Late Bluff' sherds and possibly reveal some particular paste tendency through time. But even with this addition I find continued mixing throughout the time span of Middle and Late Bluff.

One of the interesting features that now appears to be developing in these thin section experiments is the consistent associations of features for certain paste types and temper. For example, in checking the summary charts for Research Reports 3, 4, and 5, some types have approximately the same component parts in their descriptions. Paste A either is grit tempered with acid-igneous rocks (meta also) or when grog tempered has mainly the A type grog. Paste B, when grit tempered contains a variety of rock types and when grog tempered, contains a high amount of A. Another consistency that appears is the paste type F with its grog temper consisting of a few types and almost ubiquitous clinker. The problem of grog tempering and its potential for a great deal of mixing of types has been discussed in Research Report No. 3 (page 16).

Two possible explanations for what we have presented thus far in these experiments are appealing. First we can visualize a center where, for certain parts of the year, many family groups come together and bring with them the pottery made in the surrounding regions from a variety of clays. This would account for the variation to be found in a single pottery variety. Some, such as paste F would represent those vessels made locally from alluvial deposits, while pastes such as A and B would represent those made in areas such as Jersey County, Illinois. Another explanation involves a group which remains in the area and imports either vessels or a wide variety of clays from the surrounding region.

With two or more such alternatives to aim at, it would be possible now to continue exploring other sites and areas in order to see what types of pastes are used and what the local sources are. We know, for example, that the distinctive pink to pinkish-gray white pottery that is found over the American Bottoms (always paste A), is also found in Jersey County. Also in that area I have found a weathered black shale which in the laboratory can be made to duplicate the features observed in the prehistoric sherds. It would appear at present that the first alternative is the more likely.

With the paste and temper types mixed as they are through this sequence, I might harp some more about the possibility that we are dealing with a much shorter time period than is implied by the use of 'early', 'middle', and 'late'. With hundreds of years to work with (500 -800 AD) indicated in the Wittry and Vogel paper, it would seem to me that more clear-cut changes in pastes and temper would be associated with a time sequence. Unfortunately our sample is small, and we are dealing with only one pottery variety. Since other pottery varieties are discussed in the Wittry and Vogel paper, an interesting question presents itself. Does the paste and temper variation for the other varieties also fit that which has been presented here? Obviously much more thin section study is needed.

SUMMARY TABLE - Part I.

<u>Thin Section</u>	<u>Paste of Sherd</u>	<u>Temper Type</u>	<u>Grit</u>	<u>Grog Paste Types</u>
C-476 (H69-EB)	B	Grog	Acid-Ig & Meta & FeSS	A, Grog in Grog (? in A) few silty with sand (?)
C-471 (H42-MB)	F	Grog	--	Clinker & F
C-472 (H51-MB)	G	Grog	Acid-Ig & Basic Ig	G
C-473 (H60-MB)	A	Grog	Acid-Meta & Basic Ig	A, F, grog in grog (? in A)
C-474 (H64-MB)	F	Grog	Acid-Ig	A, clinker
C-475 (H64-MB)	D	Shel	none	none
C-477 (H70-MB)	I	Grog	?	I, A
C-478 (H75-MB)	C	Grit	Acid-Ig	none
C-479 (H72-MB)	F	Grog	?	F, G(?)
C-467 (H17-LB)	L	Grit	Limestone	none
C-468 (H18-LB)	L	Grit	Limestone	none
C-465 (H73-LB)	A	Grit	Acid-Meta	none
C-480 (H73-LB)	B	Grog	Acid-Ig	B, A
C-481 (H73-LB)	L	Grit	Limestone	none
C-482 (H73-LB)	F	Grog	--	Clinker
C-464 (H19-?)	A	Grit	Acid-Meta	none

C-466 (H19-?)	L	Grit	Limestone	none
C-469 (H19-?)	L	Grit	Limestone	none
C-470 (H19-?)	B	Grit	Variety	none

SUMMARY TABLE - Part II.

C-120 (H44-LB)	K	Grit	Acid-Ig	none
C-121 (H44-LB)	A	Grog	Acid-ig	A, K
C-123 (H44-LB)	K (?)	Grit	Acid-Ig	none
C-119 (H75-LB)	K (?)	Grit	Acid-Ig	none
C-122 (H75-LB)	F	Grog	?	F, A, (shel) grog in grog
C-124 (H75-LB)	F	Grog	none	F, A, clinker (1)
C-71 & 72 (Fea. 142)	F	Grog	none	Clinker, F

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